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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/761,451	01/16/2001	Joseph W. Tsang	10982033-1	5127

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EXAMINER

SHOSHIO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/761,451

Applicant(s)

TSANG ET AL

Examiner

Callie E. Shosho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 26 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1 and 3-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1 and 3-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. All outstanding rejections and objections except for those described below are overcome by applicants' amendment filed 6/26/02.

In light of the use of new reference against the present claims, namely, Gore (U.S. 6,417,248, which was published after the mailing of the previous office action, as well as the new arguments set forth regarding Kashiwazaki et al. (U.S. 5,640,187) as set forth in paragraph 4 below, the following action is non-final.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 3-6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gore (U.S. 6,417,248) in view of Takizawa et al. (U.S. 5,623,294).

Gore discloses ink set comprising yellow, magenta, cyan, and black inks as well as fixative composition wherein the fixative composition comprises vehicle and fusible material which has glass transition temperature and melting point of 50-90 °C such as polyvinyl pyrrolidone and polymers obtained from alkyl (meth)acrylates. It is disclosed that the fixative either underprints or overprints the inks (col.3, lines 13-19 and 61-65, col.6, line 64, col.7, lines 44-51, col.7, line 66-col.8, line 6, col.8, lines 40-49, and col.18, lines 6-14).

The difference between Gore and the present claimed invention is the requirement in the claims of molecular weight of polymer in the fixative composition.

Takizawa et al., which is drawn to ink set comprising fixative and ink, disclose the use of polymer having weight average molecular weight of 1,000-500,000 in the fixative in order to control the viscosity and the jettability of the fixative (col.9, lines 25-32).

In light of the motivation for using polymer with specific weight average molecular weight disclosed by Takizawa et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to choose polymer in Gore which has such weight average molecular weight, including those presently claimed, in order to form a fixative with suitable viscosity and good jettability, and thereby arrive at the claimed invention.

NOTE: As set forth in amended 35 USC 103(c), subject matter which qualifies as prior art under one or more subsections (e), (f), and (g) of section 102 cannot be applied against the claimed invention if the prior art and the claimed invention “were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.” This rule change to 103(c) applies to any patent application filed on or after November 29, 1999. See Official Gazette, April 11, 2000. As noted in the Official Gazette, the “mere filing of a continuation application on or after November 29, 1999 will serve to exclude commonly owned 102(e) prior art that was applied, or could have been applied, in a rejection under 103 in the parent application.”

Given that the filing date of the present application is subsequent to November 29, 1999, applicant is advised that a statement indicating that Gore (U.S. 6,417,248) was commonly owned at the time the present invention was made will be required to remove the rejection under 35 USC 103. See the Official Gazette Notice of April 11, 2000, 1233 OG 54.

4. Claims 1 and 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al. (U.S. 5,640,187) in view of Mercurio et al. (U.S. 4,023,977), Satake et al. (U.S. 5,814,685), Takizawa et al. (U.S. 5,623,294), and Thompson et al. (U.S. 6,341,856).

Kashiwazaki et al. disclose a fixative for ink jet printing wherein the fixative underprints the ink and wherein the fixative comprises vehicle and 0.001-20% polymer including (i) basic polymer including homopolymers of vinyl pyrrolidone, vinyl pyridine, and vinyl imidazole or copolymer of either vinyl pyrrolidone, vinyl pyridine, or vinyl imidazole with monomers such as vinyl ester, (meth)acrylates, styrene, and vinyl ether or (ii) acidic polymer including copolymers of (meth)acrylic acid with monomers such as vinyl ester, (meth)acrylates, styrene, and vinyl ether. It is also disclosed that the ink jet printer contains separate cartridges for each of the fixative and the ink (col.2, lines 28-45, col.5, lines 3-26, col.10, lines 32-37, 40-42, 54-55, and 57-62, col.11, lines 7-8 and 28-31, and col.19, lines 19-24).

The difference between Kashiwazaki et al. and the present claimed invention is the requirement in the claims of (a) fixative is used to underprint at least three inks and (b) the glass transition temperature, weight average molecular weight, and melting point of the polymer present in the fixative.

With respect to difference (a), it is well known that in order to produce multicolor prints, color ink jet process must be used which contains more than one color ink. It is well known in the art to use fixative with single ink, set of three inks including yellow, magenta, and cyan inks, and sets of four inks including yellow, magenta, cyan, and black inks. Evidence to support this position is found in Takizawa et al. (col.2, lines 47-60, col.2, line 66-col.3, line 1, and col.22, lines 1-5).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use the fixative composition of Kashiwazaki et al. to underprint as set of three or four inks, and thereby arrive at the claimed invention.

With respect to difference (b), Kashiwazaki et al. clearly disclose the use of polymers as presently claimed, but is silent with respect to the glass transition temperature, weight average molecular weight, and melting point of these polymers.

The glass transition temperatures of the monomers used to obtain the polymers in Kashiwazaki et al. are well known, as found in references such as Mercurio et al. (col.3, line 63-col.4, line 18). The glass transition temperature (T_g) of vinyl acetate ($T_g = 30^{\circ}\text{C}$), propyl methacrylate ($T_g = 35^{\circ}\text{C}$), t-butyl acrylate ($T_g = 43^{\circ}\text{C}$), vinyl pyrrolidone ($T_g = 54^{\circ}\text{C}$), etc. disclosed by Kashiwazaki et al. all fall within the glass transition temperature presently claimed. Further, given the relationship between the type and amount of monomer utilized to form a polymer and the glass transition temperature of the polymer as found in col.3, lines 54-64 and col.4, lines 10-19 of Satake et al., it would have been within the skill level of one of ordinary skill in the art to choose the types and amounts of monomers used to form the polymers of Kashiwazaki et al. in order to control the glass transition temperature of the polymer and thus the viscosity and water resistance of the fixative composition.

With respect to the weight average molecular weight, Takizawa et al., which is drawn to ink set comprising fixative and ink, disclose the use of polymer having weight average molecular weight of 1,000-500,000 in the fixative in order to control the viscosity and the jettability of the fixative (col.9, lines 25-32).

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With respect to the melting temperature, Thompson et al. disclose that ink jet printers normally operate at temperatures of 50-150 °C (col.10, lines 38-39). Given that the fixative of Kashiwazaki et al. is printed using an ink jet printer and further given that in order that the ink be properly ejected from the nozzles of the ink printer the fixative must be in liquid form, it would have been obvious to one of ordinary skill in the art to choose polymer which melts at 50-150 °C in order that the fixative can be properly liquefied and ejected from the ink jet printer without clogging the printer nozzle.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to choose polymer in Kashiwazaki et al. which has glass transition temperature, weight average molecular weight, and melting temperature, including those presently claimed, in order to form a fixative with suitable viscosity and good water resistance and jettability which is ejected from the printer nozzles without clogging the printer, and thereby arrive at the claimed invention.

5. Claims 10 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al. (U.S. 5,640,187) in view of Lawrence et al. (U.S. 6,280,027) and Thompson et al. (U.S. 6,341,856).

The rejection is adequately set forth in paragraph 10 of the office action mailed 2/26/02, Paper No. 5, and is incorporated here by reference.

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6. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al. in view of Lawrence et al. and Thompson et al. as applied to claims 10 and 14-15 above, and further in view of Kurabayashi et al. (U.S. 5,985,975).

The rejection is adequately set forth in paragraph 11 of the office action mailed 2/26/02, Paper No. 5, and is incorporated here by reference.

7. Claims 10 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al. (U.S. 5,640,187) in view of Lawrence et al. (U.S. 6,280,027) and Thompson et al. (U.S. 6,341,856).

The rejection is adequately set forth in paragraph 12 of the office action mailed 2/26/02, Paper No. 5, and is incorporated here by reference.

8. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al. in view of Lawrence et al. and Thompson et al. as applied to claims 10 and 14-15 above, and further in view of Kurabayashi et al. (U.S. 5,985,975).

The rejection is adequately set forth in paragraph 13 of the office action mailed 2/26/02, Paper No. 5, and is incorporated here by reference.

Response to Arguments

9. Applicants' arguments with respect to Kurabayashi et al. (U.S. 5,985,975) have been fully considered but are moot in view of the discontinuation of this reference against the present claims.

10. Applicants' arguments have been considered but with the exception of arguments relating to Kurabayashi et al., they are not persuasive.

Specifically, applicants argue that:

(a) the 1.132 declaration establishes unexpected or surprising results over the cited prior art.

(b) No disclosure in Kurabayashi et al. that the fixative underprints at least three inks.

With respect to difference (a), it is noted that present claims 10-15 require fixative comprising reactive monomer such as isocyanate and second component such as polyol wherein the isocyanate and polyol are kept in separate cartridges and then reacted upon printing on the print medium to form polymer (polyurethane), i.e. two-part system. Kashiwazaki et al. disclose fixative for ink jet printing wherein the fixative comprises vehicle and polyurethane, i.e. one-part system.

In attempting to meet the limitation of the present claims, examiner set forth two arguments. On the one hand, examiner argued that given that the present claims are drawn to fixative, and further given that the claimed fixative is the same as the fixative of Kashiwazaki et al. once the isocyanate and polyol are reacted on the printing medium, it was not seen how the process of forming the fixative by reacting ingredients on print medium to form polymer would lead to the claimed fixative as being patentable over the same fixative disclosed by directly jetting polymer onto print medium (see paragraph 10 of the office action mailed 2/26/02). On the other hand, examiner combined Kashiwazaki et al. with Thompson et al., which is drawn to ink composition comprising polyisocyanate and polyol. Thompson et al. discloses that either the

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polyol and polyisocyanate are contained in the ink together or all the polyol is contained in the ink while all the polyisocyanate is stored separately in another ink reservoir in order to prevent premature reaction between the polyisocyanate and the polyol (see paragraph 11 of the office action mailed 2/26/02).

In response, applicants have filed a 1.132 declaration, which discloses the advantages of two-part fixative system compared to one part-fixative system. In the declaration, applicants state that (i) polymer formed from two-part fixative system has better binder properties and thus more greatly enhances water fastness and smudge fastness of the ink, (ii) simple low molecular weight molecules in two-part system do not adversely affect pen performance of printer as do high molecular weight preformed polymers found in one-part system, and (iii) in a two-part system, a variety of crosslinking monomers can be successfully applied to print samples.

However, it is the examiner's position that the declaration is not successful in establishing unexpected or surprising results over the cited prior art given that while the declaration sets forth several advantages regarding the presently claimed two-part system, applicants do not provide any clear and convincing factual evidence to support this position. That is, applicants have provided conclusionary statements regarding the superiority of two-part fixative system without supporting evidence, i.e. quantitative data. As set forth in MPEP 716.01(c), "it is well settled that unexpected results must be established by factual evidence". Further, as set forth in *In re Beattie*, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992), the courts held that declaration of seven persons skilled in the art offering opinion evidence praising the merits of the claimed invention were found to have little value because of lack of factual support while in *Ex parte Gregory*, 21 USPQ2d 1058 (Bd. Pat. App. & Inter. 1991), the courts

held that "conclusory statements that results were "unexpected" unsupported by objective factual evidence, were considered but were not found to be of substantial evidentiary value".

Thus, given that the applicants' 1.132 declaration does not provide clear and convincing evidence to support applicants' position regarding the superiority of two-part fixative system as compared to one-part fixative system, it is the examiner's position that the declaration is not successful in establishing unexpected or surprising results over the cited prior art or in removing the rejections of record against present claims 10-15.

With respect to argument (b), it is agreed that, with respect to present claims 1 and 3-9, while Kashiwazaki et al. disclose applying fixative composition to single ink composition, there is no disclosure in Kashiwazaki et al. to apply the fixative to at least three ink compositions. However, given that Kashiwazaki et al. disclose that the fixative is used in order to improve the image density as well as water resistance, abrasion resistance and/or light resistance of the printed image, and given that it is well known to use set of inks in order to produce multicolor printed image, it therefore would have been obvious to one of ordinary skill in the art to use fixative of Kashiwazaki et al. with as many inks as required to produce the desired printed image.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Callie Shosho
September 20, 2002

Vasu Jagannathan
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